screw acts as a damper to limit the vibration of the carbon-receptacle, thereby preventing a confusion of sounds.

Now it is well known that the casing of the transmitter being made of metal contracts and expands with changes of temperature; but the ratio of expansion of the casing is much greater than that of the carbon diaphragm, and therefore when the casing contracts the carbon diaphragm will be too large, and a contraction of the casing will cause the diaphragm to be sprung at its center and in the line of least resistance, which will be away from the carbon-receptacle, and therefore the diaphragm will be concave toward the carbon-receptacle. Now if the carbon-receptacle were held stationary this concavity of the diaphragm would in extreme cases produce a separation between the carbon-receptacle and the diaphragm and allow the pulverized carbon to sift down between the diaphragm and the retaining-ring and in all cases would cause a temporary enlargement of the carbon-receptacle, and the pulverized carbon will accommodate itself to the enlarged chamber and move down into the lower part thereof; but on the expansion of the casing when the diaphragm assumes its normal position the carbon-receptacle will be reduced to its original size and the carbon will be compressed in the lower part thereof to such an extent that it will be no longer sensitive to the vibrations of the diaphragm.

By my means of flexibly mounting and supporting the carbon-receptacle by means of the universal bearing the said carbon-receptacle automatically adjusts itself and alines itself with the diaphragm under all conditions, and the said carbon-receptacle is caused to maintain a constant relation with the diaphragm, so that the retaining-ring will always be in contact with the said diaphragm and the carbon-receptacle will never become abnormally enlarged, but the maximum capacity thereof will remain constant.

What I claim is—

1. In a telephone-transmitter, the combination of a mouthpiece, a casing, a diaphragm arranged in said casing, a plate, an annular flange formed integral with said plate, and arranged at a greater distance from the face of the said diaphragm than the said plate is from said diaphragm, a retaining and cushioning ring arranged between said flange and said diaphragm and a quantity of pulverized carbon arranged between said plate and said diaphragm, substantially as described and for the purpose set forth.

2. In a telephone-transmitter the combination of a mouthpiece, a casing, a diaphragm arranged in said casing, a carbon-receptacle, a cone-shaped stud formed on the outer surface of said receptacle, a bridge spanning said casing, and a flat spring secured at one end to said bridge and having an eye formed in its other end and arranged to receive the end of the cone-shaped stud.

3. In a telephone-transmitter, the combination of a mouthpiece, a casing, a diaphragm arranged in said casing, a ring secured in said casing for holding said diaphragm in position, arms formed integral with said ring at diametrically opposite sides thereof, a bridge spanning said arms, a carbon-receptacle, a cone-shaped stud formed on the exterior of said carbon-receptacle, a spring secured at one end to said bridge and having an eye formed on the other end adapted to receive the end of said stud, a head formed on said stud, a screw arranged in said bridge in line with the said head and a cushion arranged between said head and said screw, substantially as described.

4. In a telephone-transmitter, the combination of a mouthpiece, a casing, a diaphragm arranged in said casing, a carbon-receptacle, a cone-shaped stud formed on the exterior surface of said carbon-receptacle, a spring secured at one end to said casing and having a socket formed in its other end adapted to receive the end of the stud, a head formed on the end of said stud, a cushioning-pad secured on the end of said head and an adjustable screw secured in said casing in line with said head, substantially as described.

5. In a telephone-transmitter the combination of a mouthpiece, a casing, a diaphragm arranged in said casing, a carbon-receptacle, a cone-shaped stud formed on the outer surface of said receptacle, a bridge spanning said casing and a spring secured at one end to said bridge and having its other end arranged to form a universal bearing for said cone-shaped stud.

In testimony whereof I sign the foregoing specification, in the presence of two witnesses, this 4th day of April, 1903, at Cleveland, Ohio.

JOSEPH A. WILLIAMS.

Witnesses:
VICTOR C. LYNCH,
G. M. HAYES.